Common Mode Filter
5.5x5.5mm AEC-Q200

SIC-555M41

MERITEK

FEATURE

- Common Mode Filter For Large Current Applications
- Excellent Impedance Characteristics for Noise Suppression
- Low Profile Construction Design
- Application: High-Density Portable Devices, Personal Computers, Display Panels, DC Power Lines and Automotive Power Trains
- AEC-Q200 Compliant

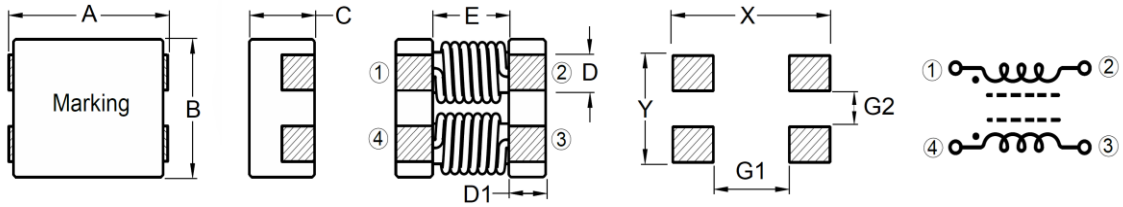
RoHS

ELECTRICAL CHARACTERISTICS

Part Number	Impedance (Ω)		Test Frequency (MHz)	DCR Max (mΩ)	Rated Current (A)	Rated Voltage (Vdc)	IR Min (MΩ)
	Min	Typ					
SIC1018A5555M41	100	140	100	6.00	8.5	80	10
SIC3014A8555M41	150	300	100	7.50	4.8	80	10
SIC5014A5555M41	300	500	100	10.5	4.5	80	10
SIC7013A8555M41	500	700	100	13.0	3.8	80	10
SIC1023A0555M41	750	1000	100	20.0	3.0	80	10
SIC1422A8555M41	1000	1400	100	38.0	2.8	80	10

Notes:
1. All test data referenced to 25ºC ambient.
2. Operating Temperature: -55ºC ~ +125ºC (Including Self-temperature rise)

DIMENSIONS



Unit: mm

Size Code	A	B	C max	D ±0.5	D1 ±0.5	E Typ	X	Y	G1	G2
555	5.5 ±0.5	5.5 ±0.5	3.5	1.2	1.1	3.3	7.0	7.0	4.0	1.3

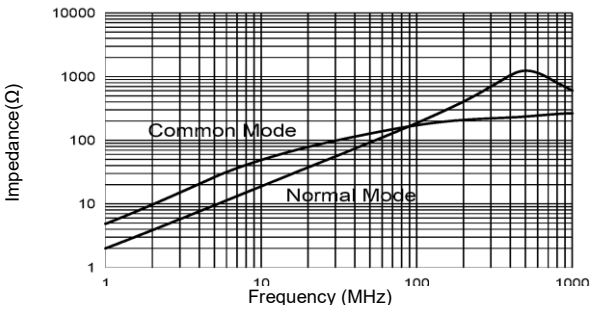
PART NUMBERING SYSTEM

SIC	142	2A8	555	M41
(1)	(2)	(3)	(4)	(5)

No	Item	Code	Description	
(1)	Product Code	SIC	Surface Mount Inductor, Common Mode Choke type	
(2)	Impedance	142	1400Ω	First two digits: significant, Third: Multiplier
(3)	Rated Current	2A8	2.8A	A: Decimal
(4)	Size Code	555	5.5 X 5.5mm	L x W mm
(5)	Series Code	M41	Common Mode Filter, for Power Line, AEC-Q200 Compliant	

CHARACTERISTIC CURVE

SIC1018A5555M41



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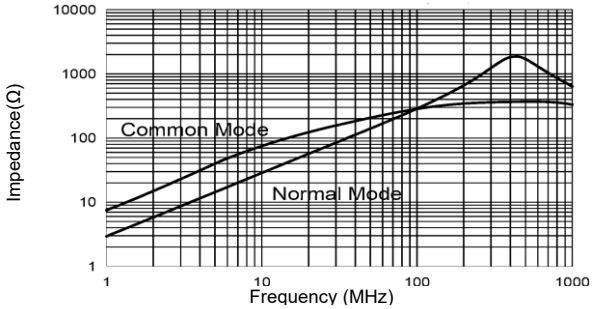

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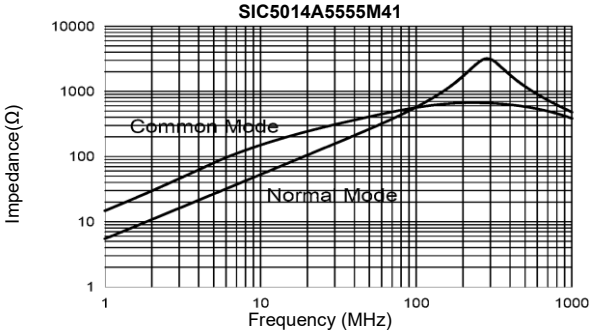

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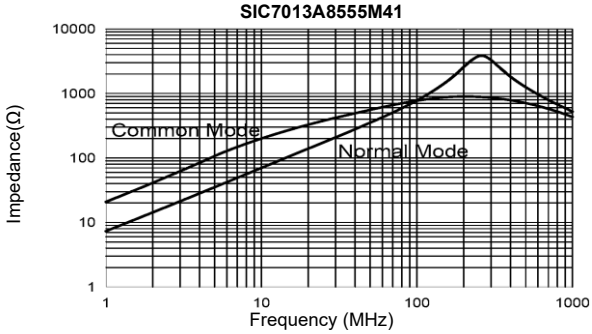

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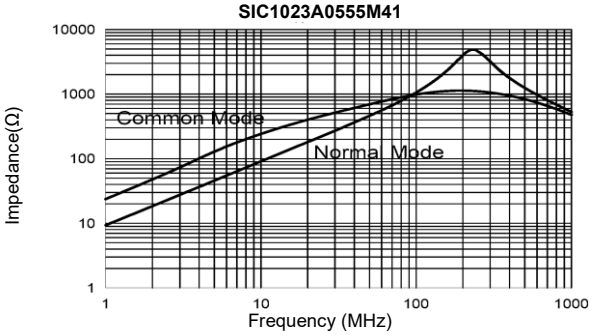
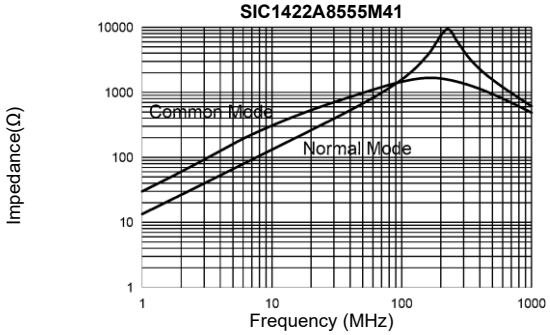
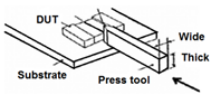
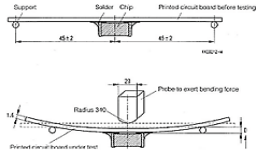


SIC1422A8555M41



RELIABILITY TEST CONDITON AND REQUIREMENT

<table>
<tr><th>Item</th><th>Test Standards / Conditions / Equipment</th><th>Requirement</th></tr>
<tr><td>Impedance</td><td>Agilent-4291A, Agilent-16197A</td><td>Refer to specification</td></tr>
<tr><td>DC Resistance</td><td>Agilent-4338B</td><td>Refer to specification</td></tr>
<tr><td>I.R</td><td>Agilent-4339</td><td>Refer to specification</td></tr>
<tr><td>Mechanical Shock</td><td>
<table>
<tr><th>Type</th><th>Peak value (g's)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi) ft/sec</th></tr>
<tr><td>SMD</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
<tr><td>Lead</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
</table>
3 shocks in each direction along 3 perpendicular axes (18 shocks).</td><td>Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Solderability</td><td>Method B1, 4 Hrs at 155°C dry heat at 255°C±5°C
Test Time: 5 +0/-0.5 seconds.
Method D category 3. (steam aging 8 hours±15min) at 260°C±5°C
Test Time: 30+0/-0.5 seconds.</td><td>More than 95% of the terminal electrode should be covered with solder.</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>Solder temperature: 260±5°C for 10 seconds
Temperature ramp/immersion and emersion rate 25mm/s ±6 mm/s.
Completely cover the termination.
Number of cycles: 1 heat cycle</td><td rowspan="2">Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Vibration</td><td>Oscillation Frequency: 10～2K～10 Hz for 20 minutes
Total Amplitude:5g
Duration: 12 hours (20 minutes, 12 cycles each of 3 orientations)</td></tr>
<tr><td>High Temperature Exposure</td><td>Temperature: 125±2°C
Duration 1000Hrs Min
Measured at room temperature after placing for 24±2hrs</td><td rowspan="3">Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Biased Humidity</td><td>Humidity: 85±3% R.H. Temperature: 85°C±2°C
Duration: 1000Hrs Min
Measured at Room Temperature after placing for 24±2hrs</td></tr>
<tr><td>High Temperature Operational Life</td><td>Temperature: 125±2°C
Duration: 1000Hrs Min. with 100% rated current
Measured at Room Temperature after placing for 24±2Hrs</td></tr>
<tr><td>Temperature Cycling</td><td>Temperature: -40~125°C
Dwell Time: 30minutes, Transfer Time: 1minutes Max
Number of Cycles: 1000cycles
Measured at room temperature after placing for 24±2hrs</td><td rowspan="2">Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Thermal Shock</td><td>Temperature: -40~125°C
Dwell Time: 15minutes, Transfer Time: 20seconds Max
Number of Cycles: 300cycles
Measured at room temperature after placing for 24±2hrs</td></tr>
<tr><td>ESD</td><td>AEC-Q200-002 HBM ESD, Contact Discharge Level: 4KV (Level 2)</td><td>Appearance: No damage</td></tr>
<tr><td>Resistance to Solvents</td><td>Add aqueous wash chemical - OKEM clean or equivalent.</td><td>Appearance：No damage</td></tr>
<tr><td>Terminal Strength</td><td>Component mounted on a PCB apply a force 1.8kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to shock the component being tested.
 
</td><td>Appearance：No damage</td></tr>
<tr><td>Board Flex</td><td>Place the 100x40mm FR4 board into a fixture with the component facing down. Apply a force which will bend the board (D) x = 2mm minimum. Duration: 60 (+5) seconds. The Force is to be applied only once to the board
  </td><td>Appearance：No damage</td></tr>
<tr><td>Flammability</td><td>Electrical Test not Required</td><td>V-0 or V-1 are acceptable.</td></tr>
</table>

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5.5x5.5mm AEC-Q200

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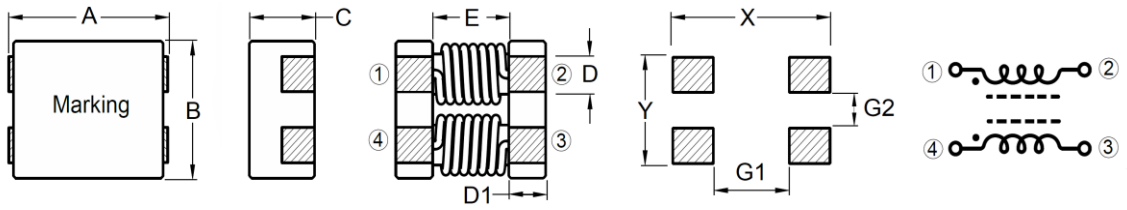
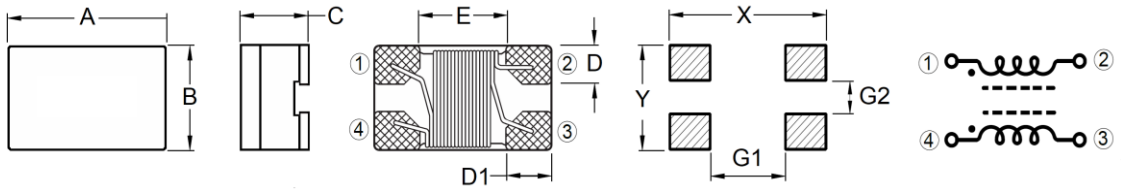
DIMENSIONS – SIC-M41 Series



Unit: mm

Size Code	A	B	C max	D ±0.5	D1 ±0.5	E typ	X	Y	G1	G2
121	12.0±0.3	11.0±0.3	6.4	2.7 ±0.2	2.5 ±0.2	7.0	12.2	8.1	6.8	2.3
151	15.0 ±0.4	13.0±0.4	6.0	2.7	2.8	9.3	15.0	10.0	7.0	3.0
555	5.5 ±0.5	5.5 ±0.5	3.5	1.2	1.1	3.3	7.0	7.0	4.0	1.3
706	7.0 ±0.5	6.0 ±0.5	3.8	1.5	1.7	3.5	9.0	4.5	4.0	1.5
907	9.0±0.2	7.0±0.2	4.5	1.5 ±0.2	1.7 ±0.2	5.7	11	5.0	5.0	1.5

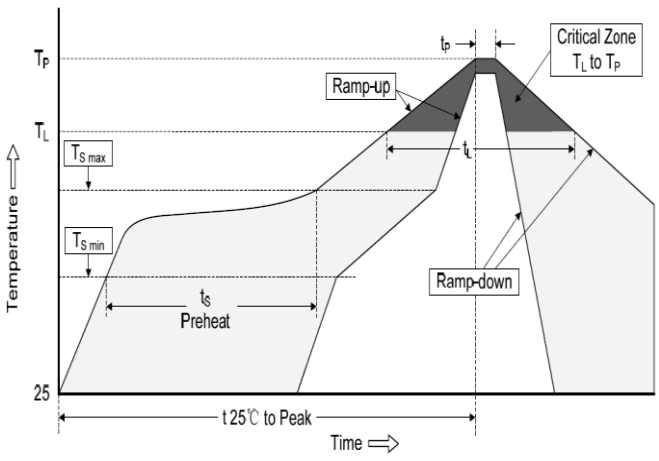


Unit: mm

Size Code	A ±0.2	B ±0.2	C ±0.2	D ±0.1	D1 ±0.1	E	X	Y	G1	G2
05 (0805)	2.0	1.2	1.2	0.5	0.51	1.0	2.6	1.25	1.1	0.45
06 (1206)	3.2	1.6	2.0	0.5	0.50	2.2	3.7	1.6	1.9	0.4
10 (1210)	3.2	2.5	2.2	0.8	0.90	1.4	4.4	3.5	1.6	0.6
12 (1812)	4.5	3.2	2.8	1.0	1.20	2.1	4.8	3.8	2.5	0.7

RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	**Temp. Min $T_{s(min)}$**	150°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) (t_s)	60 ~120 seconds
Average ramp up rate (Liquidus Temperature) (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L (Ramp-up rate)		3°C/second max
Reflow	**Temp. (T_L)**	217°C
	Time (min. to max.) (t_L)	60 ~150 seconds
Peak Temperature (T_P)		See table below
Time within 5°C of actual peak Temperature (t_p)		10 seconds max
Ramp-down Rate		6°C/second max
Reflow Times		3 times max



Peak Temperature (T_P)			
Volume	**< 350mm³**	**350-2000mm³**	**> 2000mm³**
Thickness < 1.6mm	260°C	260°C	260°C
Thickness 1.6-2.5mm	260°C	250°C	245°C
Thickness ≥ 2.5mm	250°C	245°C	245°C

*Specifications subject to change without notice